Claims

1. Drive wherein mechanically intermittent or continuous power is transmitted from a driving shaft to a driven shaft by means of an endless belt and at least one pulley, wherein mechanic power is transmitted between belt and pulley by means of friction, wherein on said pulley the incoming part and the outgoing part of the belt are axially spaced apart.

2. Drive according to claim 1, wherein on the said pulley the belt has a contact angle larger than 360 degrees of angle.

3. Drive according to claim 1 or 2, provided with means due to which the frictional coefficient between belt and the said pulley is larger in tangential direction than in axial direction.

4. Drive according to claim 1, 2 or 3, wherein the said pulley is provided with one or more contact or engagement surfaces for the belt that are movable in a direction comprising an axial directional component of the pulley.

5. Drive according to claim 4, wherein the contact or engagement surfaces are movable in axial direction of the pulley.

6. Drive according to claim 4, wherein the contact or engagement surfaces are movable according to a direction that is at a small angle α to the pulley shaft, preferably approximately 20 degrees at a maximum.

7. Drive according to claim 6, wherein the incoming part of the belt is at an angle of (90 – α) degrees to the movement direction of the contact or engagement surfaces.

8. Drive according to any one of the preceding claims, wherein the engagement surfaces of the pulley are positioned according to a cylindrical body of revolution that may or may not be interrupted in circumferential direction.

9. Drive according to any one of the claims 1-7, wherein -considered in a plane of longitudinal-section of the pulley- the engagement surfaces of the pulley are positioned according to a path that is at an angle, preferably a constant acute angle, to the shaft.

10. Drive according to any one of the preceding claims, wherein the said pulley is attached to the driving shaft.

11. Drive according to any one of the preceding claims, wherein the said pulley is attached to the driven shaft.

12. Drive according to any one of the claims 4-11, characterised in that the contact or engagement surfaces consist of parts of the circumferential surface of small wheels or rollers.

13. Drive according to claim 12, characterised in that the small wheels or rollers are capable of rotating about shafts that are perpendicular to the centre line of the shaft about which the pulley rotates.

14. Drive according to claim 12, characterised in that the wheels or rollers consist of one or more rows of balls or rollers that roll over an axial surface and move in an endless path.

15. Drive according to the preceding claim 14, characterised in that two or more ball tracks are adjacent wherein over at least a part of the track the balls of adjacently situated tracks engage such into each other that they are incapable of axial displacement with respect to each other.

16. Drive according to claim 14, characterised in that the rollers are provided with at least one groove in the outer surface of the roller that corresponds with a ridge on the axial surface.

17. Drive according to claim 16, characterised in that the groove corresponds with a flexible or rigid circulating wire or band comprising the circulating rollers and keeping them in their path.

18. Drive according to claim 16 or 17, characterised in that the rollers are provided at both sides with a shaft end moving in a straight or round-going guide.

19. Drive according to claim 16, 17 or 18, characterised in that the rollers are rotatably connected to each other, for instance for that purpose provided with a bore hole, wherein the rollers are connected to each other via shafts through said bore holes which shafts can be connected to each other.

20. Drive according to any one of the claims 4-11, characterised in that the contact or engagement surfaces consist of surfaces of movable segments that are able of moving, particularly sliding, axially over the pulley.

21. Drive according to claim 20, wherein the segments are movable with respect to each other.

22. Drive according to claim 21, wherein the segments are rotatably connected to each other.

23. Drive according to claim 21 or 22, wherein the segments are elastically connected to each other, such as by means of an elastic band.

24. Drive according to claim 21, 22 or 23, wherein the segments are axially guided using meshing ribs and grooves provided on the segments and their support.

25. Drive according to any one of the claims 4-24, wherein the contact or engagement surfaces are convex in a radial plane of cross-section of the pulley.

26. Drive according to claim 25, wherein the radius of the convexity is selected such that the tangents, considered in a radial plane of the pulley, of engagement surfaces that are adjacent in pulley circumferential direction, at the location of their edges that face each other, are situated on or beyond the chord connecting said edges to each other.

27. Drive according to one or more of the preceding claims, characterised in that guidance or control means are present with which the belt can be moved in axial direction over the pulley over a distance of at least the belt width per revolution of the pulley.

28. Drive according to claim 27, characterised in that the belt is moved axially by a control disk or control ring rotating along with the pulley, which in an embodiment at the outside is capable of moving, particularly tilting, axially with respect to the pulley.

29. Drive according to claim 27 or 28, characterised in that the belt is moved axially by a fixedly positioned control member, extending from the radial outside between adjacent belt parts, for instance in the form of a control disk which does not move axially with respect to the pulley and of which the axis of rotation is situated beyond the axial guides.

30. Drive according to any one of the preceding claims, characterised in that the used belt at one side is provided with teeth that mesh with the teeth of at least a toothed pulley whereas the side of the belt that is not toothed transmits the driving force via friction on at least one pulley.

31. Drive according to any one of the claims 4-30, characterised in that the surface parts over which the belt contacts form a part of axial guides distributed over the circumference of the pulley and which are radially movable with respect to the pulley.

32. Drive according to claim 31, characterised in that the axial guides move in radial slits or grooves of two radial disks and also move in spiral-shaped slits or grooves of two spiral disks, wherein both the radial and the spiral disks are situated on both sides of the axial guides, wherein the two radial disks are connected to each other or mechanically coupled such that they co-rotate with each other and wherein the axial guides are moved radially due to rotation of the radial disks and the spiral disks with respect to each other.

33. Drive according to claim 31, characterised in that the axial guides move in radial slits or grooves of two radial disks and also move in spiral-shaped slits or grooves of two spiral disks, wherein both the radial and the spiral disks are situated on both sides of the axial guides, wherein the two spiral disks are connected to each other or mechanically coupled such that they co-rotate with each other and wherein the axial guides are moved radially due to rotation of the radial disks and the spiral disks with respect to each other.

34. Drive according to claim 31, wherein the axial guides are disposed on spindles that are radially oriented and are radially moved due to rotation of a central toothed wheel with respect to the pulley, wherein said central toothed wheel rotates the spindles placed radially in the pulley in order to radially move the axial guides.

35. Drive according to claim 32, 33 or 34, characterised in that the radial disks, the spiral disks or the pulleys with the spindles are connected to the driven or the driving shaft of the pulley, wherein the axial guides are moved by decelerating the spiral disks, the radial disks or the central toothed wheel, respectively, while the shaft of the pulley is rotating.

36. Drive according to claim 32, 33 or 34, characterised in that the two types of disks or the central toothed wheel and the pulley with the spindles rotate such with respect to each other under spring force that the axial guides move in the direction of the largest diameter or the smallest diameter.

37. Drive according to claim 32, 33 or 34, characterised in that the spiral disks and the radial disks or the central toothed wheel and the pulley with the spindles can be mechanically coupled to each other with a controllable coupling.

38. Drive according to any one of the claims 31-37, and claim 25, wherein the convexity of the segments in the radial plane corresponds with approximately half the minimum radius that can be set of the entire engagement surface for the belt on the pulley.

39. Drive according to any one of the claims 32-38, provided with means for altering the pre-tension of the belt during adjusting the transmission ratio.

40. Drive according to any one of the preceding claims, characterised in that the belt is provided with a tensile reinforcement, such as tension cords, and with a tread surface at the radial inside of the tension cords that is just as thick or thinner than the cover layer at the radial outside of the tension cords.

41. Drive according to any one of the preceding claims, wherein the belt is provided with bevelled edges, preferably situated at the radial outside of the belt.

42. Pulley for a drive provided with a drive belt, which pulley is disposed on a driving shaft or a driven shaft, wherein the pulley is provided with support surfaces for the drive belt, wherein the support surfaces are adjustable in radial distance to the centre line of the pulley.

43. Pulley according to claim 42, wherein the support surfaces are supported via first supports on support surfaces of second supports in the rest of the pulley, wherein the location of the effective support surfaces of the second supports is radially adjustable.

44. Pulley according to claim 43, provided with an adjustment part circulating with the pulley, which adjustment part can temporarily be

given a speed deviating from the pulley speed in order to adjust the radial position of the support surfaces.

45. Endless belt for transmitting power from a driving shaft to a driven shaft, wherein the belt has a tensile reinforcement, such as tension cords or the like, wherein the portion of the belt that, considered in cross-section, is situated at the radial inside of the belt has a radial size that at the most equals the radial size of the portion of the belt that is situated at the other side of the tensile reinforcement.

46. Endless belt according to claim 45, provided with a constant cross-section.

47. Vehicle comprising a drive according to one or more of the preceding claims, such as a bicycle.

48. Drive according to any one of the preceding claims, wherein on the pulley of the driving shaft two belts run adjacently, which belts furthermore run on respective pulleys that are attached to the driven shaft, wherein both belts have opposite winding directions.

49. Vehicle provided with one or more of the characterising measures described in the attached description and/or shown in the attached drawings.

50. Method comprising one or more of the characterising steps described in the attached description and/or shown in the attached drawings.